

ABSTRACT
of the thesis for the degree of Doctor of Philosophy (PhD)
“Sociolinguistic Issues of Multilingual Education in the Republic of
Kazakhstan (Based on the Materials of the Western Region)”, performed by
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in the educational program «6D020500 – Philology»

Description of the dissertation theme. The dissertation research analyzes the sociolinguistic aspects of multilingual education in the Republic of Kazakhstan. In contemporary sociolinguistic discourse, issues related to language education have gained particular significance and are regarded as a priority area of scholarly inquiry. In this context, the study of multilingual education practices in the Western region of Kazakhstan enables the identification of regional features in the implementation of language policy and the functioning of multilingualism within the educational environment.

The empirical basis of the research encompasses four regions of Western Kazakhstan. Its geographical location and socio-economic specificity determine the selection of this area. The region borders five administrative regions of the Russian Federation, as well as the Republic of Karakalpakstan (within Uzbekistan) and Turkmenistan. Such a borderland position contributes to the natural formation of a multilingual environment and the intensification of intercultural contacts. Furthermore, the dynamic development of the region's oil and gas industry significantly influences its social structure, migration patterns, and linguistic landscape. The sociocultural diversity and multiethnic composition of the population create favorable conditions for a comprehensive analysis of the sociolinguistic factors that determine the specific features of multilingual education.

The relevance of research. In the context of globalization and cultural diversity, issues of language education have gained particular importance. Multilingualism is regarded as one of the key directions in the development of the modern educational space. Contemporary realities require proficiency not in one or two, but in three or more languages to ensure effective participation in international communication and in professional and scientific activities. This, in turn, enhances the socio-communicative function of languages and influences the formation of the linguistic situation within society.

As a social phenomenon, multilingualism has not only pedagogical or methodological dimensions but is also closely linked to ethnic, sociocultural, and political processes within a given society.

The Republic of Kazakhstan, as a multiethnic state, naturally has a multilingual environment. To promote and institutionalize multilingualism within the educational system, the cultural project “**Trinity of Languages**” has been implemented. It aims to strengthen the status of the state language as a unifying factor of society, to preserve the role of the Russian language as a medium of intercultural communication, and to develop the English language as a tool for global interaction. The implementation of this project contributes to enhancing the country's competitiveness and its integration into the international educational space.

However, the introduction of multilingual education is accompanied by several sociolinguistic contradictions. On the one hand, it serves as an essential factor in the development of the cultural and educational environment; on the other, it affects the prestige of the state language, the level of proficiency in native languages, and the accessibility of quality education. In addition, problems related to the disruption of linguistic balance and the weakening of linguistic identity are observed. In this regard, the scientific reflection on the sociolinguistic aspects of multilingual education in Kazakhstan is particularly relevant. The purpose of this study is to identify the nature of these contradictions and propose ways to overcome them by analyzing the causes, consequences, and mechanisms of the multilingual educational environment. The findings are expected to contribute to the further development of the theoretical foundations of sociolinguistics and language sociology, as well as to the formulation of practical recommendations for improving the language and educational policy of the Republic of Kazakhstan.

The **purpose** of the research is to conduct a comprehensive analysis of the sociolinguistic features of multilingual education and to develop scientific and practical recommendations that will facilitate its effective implementation.

To achieve this goal, **the following tasks** have been set:

1. To examine the sociolinguistic problems of bilingualism and multilingualism within the linguistic situation of the Republic of Kazakhstan; to identify the sociolinguistic aspects of natural and artificial bilingualism and multilingualism; and to analyze their manifestations in Kazakhstan's linguistic landscape from a sociolinguistic perspective, with particular attention to their typological classification.

2. To develop the linguistic, sociolinguistic, linguocultural, and linguocognitive characteristics of the cultural project "Trinity of Languages" and to determine how these characteristics are implemented in the practice of multilingual education.

3. To systematically identify the sociolinguistic foundations of multilingual education by conducting a sociolinguistic analysis of the language acquisition process within the framework of multilingual learning; by revealing the sociolinguistic essence of multilingual education implemented in schools based on the state language; and by defining the specific features of multilingual education in higher education institutions.

4. To determine the current state of multilingual education within the secondary and higher education systems through an analysis of statistical data reflecting the development of multilingual learning in the western region of Kazakhstan; and, based on the results of a sociolinguistic survey conducted among the population of this region aimed at identifying the significance of languages in the context of multilingual education, to develop scientific and practical recommendations for the effective implementation of multilingual education grounded in the state language.

The object of the study is multilingual education in the Republic of Kazakhstan, considered as a sociolinguistic phenomenon that reflects the mutual influence of languages within society and the specific features of their functioning.

The subject of the study comprises the sociolinguistic characteristics and challenges of implementing multilingual education in the western region of the Republic of Kazakhstan.

Theoretical and Methodological Framework of Research Work. All issues under consideration and the objectives set in this study are formulated and addressed within the framework of general linguistic theory, taking into account the achievements and findings of both international and Kazakhstani research in sociolinguistics. The study is based on the works of Kazakhstan's scholars, such as B.Kh. Khasanov (1976, 1987, 1989, 1990, 1992, 2006, 2013), A.E. Karlinsky (2011), E. D. Suleimenova (1989, 1992, 2002, 2005, 2011), Sh. Kurmanbaiuly (2014), A.O. Tymbolova (2009), S.K. Kulmanov (2022), B.Zh. Kurmanova (2001, 2002, 2023), A.Sh. Akzhigitova (2013), S.S. Kenzhemuratova (2018), A. Utegenova (2020, 2024), N.G. Shaimerdenova (2002, 2005, 2016), O.B. Altynbekova (2006), N.M. Zhanpeisova, and Zh.T. Utaliyeva (2009), S.Zh. Bayandina (2014), K.T. Utegenova (2014), A.M. Abasilova and S.A. Assanbayeva (2015). The research also draws upon the studies of foreign sociolinguists, including U. Weinreich (1953), A. Martinet (1965, 1975), J. MacNamara (1967), E. Haugen (1972), L.V. Shcherba (1974), V.A. Avrorin (1975), R.T. Bell (1980), Jasone Cenoz (2001, 2013), D. Zappatore (2003), C. Nitsch (2003), P. Auer (2008), L. Wei (2008, 2011), R. Franceschini (2009), D. Singleton (2011), L.M. Khussainova (2015), O. V. Legostaeva (2014, 2015), and C. Vallejo (2018).

Sources of the Research:

1. Statistical and quantitative data obtained from the results of the National Population Censuses of the Republic of Kazakhstan conducted in 1999, 2009, and 2021, as well as from various sectoral online resources.
2. The results of two sociolinguistic surveys conducted in the Western region of Kazakhstan between 2021 and 2025, covering 1,000 and 826 respondents, respectively.

Research Methods. To address the stated objectives, a comprehensive set of methods was employed, combining quantitative and qualitative analysis.

Theoretical methods. The method of analysis was used to identify the features of language policy and the process of implementing multilingual education. A content analysis was carried out on the language policy of the Republic of Kazakhstan, the cultural project “Trinity of Languages”, state educational standards, and regulatory documents governing the sphere of secondary and higher education. The use of this method enabled the revelation of the legal, ideological, and pedagogical foundations of multilingualism, as well as a deeper exploration of its social context.

Methods of generalization and comparison. The data obtained from various regions were systematized and compared with the results of previous studies. In particular, the number of students studying Kazakh, Russian, and English, as well as in multilingual groups, at universities in the Aktobe, Atyrau, Mangystau, and West Kazakhstan regions was compared. Based on these data, regional characteristics and the relationship between multilingualism levels and language balance were

identified. The application of this method enabled the research conclusions to be scientifically substantiated through the analysis of the empirical data obtained.

Special sociolinguistic methods. Using the sociolinguistic survey method, empirical data were collected from more than 800 respondents in the West Kazakhstan, Aktobe, Atyrau, and Mangystau regions, as well as 1,000 respondents in the Aktobe region, including pupils, students, teachers, and parents. The study examined the population's attitudes toward multilingual education, its quality and necessity, the perceived social significance of languages, and the assessment of state language policy. Special attention was paid to the degree of use of Kazakh, Russian, and English as the main components of multilingualism across various spheres of public life. The survey results demonstrated that multilingual education is generally perceived by society as a positive and relevant phenomenon. At the same time, it was revealed that the effectiveness of its implementation depends directly on ensuring equal social status for languages and maintaining a balanced language policy.

To analyze the survey results, **mathematical and statistical data processing methods** were applied. The use of these methods ensured the reliability of the collected information and enabled quantitative justification of the findings. The collected data were processed using SPSS Statistics and Google Forms Analytics. During the analysis, frequency distributions were calculated, and the response rates and participant proportions were determined. In addition, a comparative study of the data was conducted to identify differences across age groups, social status, and levels of language competence. The application of mathematical and statistical methods enhanced the objectivity of the study's results and enabled quantitative confirmation of the sociolinguistic characteristics of multilingual education.

As a result of the comprehensive application of the methods mentioned above, the following conclusions were established:

- Among the population of the western region of Kazakhstan, a balanced model of Kazakh-Russian bilingualism has been formed, while the English language is gradually strengthening its position as a language of international communication.

- The policy of multilingual education generally receives strong public support, which indicates the presence of sociolinguistic stability in the region.

- It has been proven that the effectiveness of the multilingual education system is closely related to the level of use of innovative technologies and the degree of internationalization of the educational process.

- The results of the statistical and correlation analyses empirically confirmed the interrelationships among age, professional affiliation, linguistic environment, and level of language competence.

- It has been substantiated that the phenomenon of regional multilingualism represents a complex sociolinguistic construct, shaped by the interconnected influence of language policy, public demand, and educational reforms.

The methods applied in the study, complementing one another, enabled a comprehensive characterization of multilingualism within an interdisciplinary and social context.

Main Provisions Submitted for Defense:

1. In contemporary linguistic research, there exist certain discrepancies in the interpretation of the terms “*multilingual*”, “*multilingualism*”, and “*polylingualism*”. Due to the absence of a unified theory of polylinguism in the scientific literature, researchers are compelled to rely on the theoretical foundations, terminology, and typology of bilingualism. In this regard, the present study considers the term “multilingualism” as a categorical concept encompassing proficiency in two, three, or more languages. In the linguistic situation of Kazakhstan, including the western region, all types of bilingualism and multilingualism are represented.

2. The adoption of the cultural project “Trinity of Languages” in the Republic of Kazakhstan has created objective preconditions for a harmonious, balanced, and socially effective solution to the problem of multilingualism, ensuring the functioning of three languages within a stable framework of social communication. The linguistic, linguocultural, and linguocognitive foundations of this project are based on the principles of communicative learning, within which the learner masters not only the linguistic system but also the cognitive, cultural, and sociocommunicative competences necessary for effective intercultural interaction.

3. The content aspect of multilingual education represents a dynamic category, constantly evolving in accordance with the socio-political and economic conditions of societal development. The implementation of multilingual education based on the state language in schools presupposes:

- the use of the target language both as a means and as an object of instruction;
- comparative and contrastive study of the target language in relation to the state language and national culture;
- the development of functional literacy among learners;
- the practical application of the studied languages as tools for honest communication with speakers of other cultures and linguistic communities;
- the determination of the lexical and grammatical minimum and the simplification of linguistic material in accordance with specified parameters;
- the development of skills to correlate verbalized linguistic experience with real-life contexts;
- the improvement of proficiency in target languages, taking into account the level of native language development, which serves as the foundation for acquiring new languages.

4. In the universities of the western region of Kazakhstan, multilingual education has passed the initial stage of organizational formation, and concrete measures are currently being taken to ensure its further development. Innovative educational technologies are being actively introduced, staffing issues are being addressed, the internationalization of the educational process is being implemented, and the content of multilingual instruction (textbooks, teaching and methodological complexes, etc.) is being improved. At the same time, issues of sociolinguistic monitoring have been identified as an independent area of research and have been subjected to comprehensive analysis.

5. The results of the study show that the population of the western region of Kazakhstan (Aktobe, West Kazakhstan, Atyrau, and Mangystau regions) generally gives an upbeat assessment of the current state and prospects of multilingual education. The state's language policy and its implementation enjoy broad public support. The region provides all necessary conditions for mastering the state language, and the lack of proficiency in Kazakh does not cause significant sociocommunicative difficulties among the urban population. At the same time, respondents emphasize the need to adopt a separate law on the state language. Among the region's inhabitants, a balanced model of Kazakh-Russian and Russian-Kazakh bilingualism has emerged. An analysis of the dynamics of multilingual development in the social sphere indicates that in the western region, through the interaction of Kazakh, Russian, and English, new linguistic components are emerging that reflect the distinctive features of the regional multilingual space.

Characteristics of the main research findings. In line with the research's purpose, the theoretical aspects of multilingualism in Kazakhstan's sociolinguistic context were clarified. This made it possible to consider multilingualism not only as a linguistic practice but also as an essential instrument for shaping cultural and civic identity. Taking into account regional and sociocultural factors, the study identified specific features of how the Kazakh language functions and interacts with the Russian and English languages within the system of secondary and higher education in the Western region of Kazakhstan. For the first time, an empirical assessment of the effectiveness of implementing multilingual education in Kazakhstan was conducted using sociolinguistic criteria, including language proficiency, linguistic adaptability, learners' motivation, and personal characteristics. In addition, scientifically grounded and practically oriented recommendations were developed to improve the model of multilingual education aimed at ensuring the balanced development of its components – Kazakh, Russian, and English – while maintaining the priority role of the state language.

Justification of the Novelty and Significance of the Obtained Results.

The scientific novelty of the research lies in the fact that multilingual education within Kazakhstan's educational system has, for the first time, been examined comprehensively and systematically in a sociolinguistic dimension, based on material from the western region of the country. The study identifies and theoretically substantiates the sociolinguistic foundations of multilingual education and provides an analysis of language acquisition processes within multilingual learning from a sociolinguistic perspective. The sociolinguistic characteristics of multilingual education in secondary education, as well as the contemporary features of its implementation in higher education institutions, have been identified. Based on data from sociolinguistic surveys, the research explores the current state of multilingual education implementation in the western region of Kazakhstan. The communicative role and social functions of the Kazakh, Russian, and English languages – considered the main components of multilingualism – have been clarified in terms of their use in the linguistic practices of the population. The obtained results enrich the theoretical framework addressing the sociolinguistic issues of multilingualism and multilingual education with empirical data and

determine the sociolinguistic direction of multilingual education development as a unique Kazakhstani phenomenon.

Theoretical significance. The general theoretical conclusions drawn from the dissertation research are of great importance for further study of the interaction between bilingualism and multilingualism. The results make a significant contribution to the development of sociolinguistics, promote a deeper understanding of the sociolinguistic features of multilingual education, and expand the theoretical foundations for analyzing linguistic processes in multilingual societies.

Practical significance. The practical value of the research lies in its potential to inform teaching in *Introduction to Linguistics, General Linguistics, Sociolinguistics, and Psycholinguistics*. The scientific and practical recommendations developed during the study can serve as a theoretical and methodological foundation for implementing the language policy of the Republic of Kazakhstan, as well as for introducing and improving multilingual education and teaching subjects in multiple languages.

Research approbation. The main results and conclusions of the study were discussed in domestic and international research institutions and higher educational establishments.

The research materials were reflected in the publication “*The Importance of Trilingualism in Society and Its Linguistic Issues*,” presented on May 15, 2019, at the 15th International Scientific Conference “*Europejska Nauka XXI Powieka – 2019*” (Poland, 15.05.2019, pp. 70-75). The article examines the significance of trilingualism in the Republic of Kazakhstan and the sociolinguistic aspects of its implementation.

In the same year, within the framework of the “*Modern European Science*” conference held in Sheffield, United Kingdom (30.06-07.07.2019, pp. 13-18), the article “*Trilingualism as a Result of Language Interaction*” was presented. The paper highlights issues of Kazakhstan’s language policy, the features of multilingualism, and the challenges of language contact and the functioning of three languages – the state language, Russian, and English – in the modern sociocultural context.

Particular attention is paid to their mutual influence and their roles within the system of linguistic communication. In addition, the results of the research were published in the article “*Sociolinguistic Aspects of Bilingualism and Multilingualism in the Republic of Kazakhstan*”, presented in the proceedings of the 20th International Scientific Conference of Young Scientists, PhD Doctoral Students, Master’s Students, and Undergraduates “*Youth, Science and Innovation*” (K. Zhubanov Aktobe Regional University, Aktobe, April 14, 2025, pp. 391-396). The paper provides a detailed examination of the features of bilingualism and multilingualism in Kazakhstan, revealing the historical and theoretical foundations of linguistic phenomena (including the concepts of U. Weinreich and other scholars), and analyzing the sociolinguistic and psycholinguistic aspects of the interaction between the Kazakh and Russian languages. The article particularly emphasizes the role of multilingualism in Kazakhstan’s language policy and education system: the state language – Kazakh, the language of interethnic

communication – Russian, and the international language – English are viewed as key instruments of integration into the global community. To assess the actual state of multilingualism in the educational sphere, a sociolinguistic survey was conducted among various social groups, including senior school students, university students, lecturers, teachers, and professionals from different sectors.

The first survey was conducted in 2021 and aimed to identify the features of multilingualism within the secondary and higher education systems of the Aktobe region. The online survey was conducted across four districts of the area (two Kazakh-speaking and two Russian-speaking) using *Google Forms*. The study involved 1,000 respondents. The empirical basis for the sociolinguistic analysis was the results of a population survey of the Aktobe region, the most significant industrial area in Western Kazakhstan. Participants were selected using a random sampling method to ensure data representativeness; respondents ranged in age from 14 to 60 years. The survey results indicated that the majority of participants possess varying degrees of proficiency in Kazakh, Russian, and English. The Kazakh language predominates in everyday and official communication, while Russian occupies a leading position in intercultural and professional interactions. The importance of English is steadily increasing, particularly among young people and in the educational environment; however, English proficiency remains insufficient.

The majority of respondents consider multilingualism an essential requirement of contemporary society. As the analysis showed, motivational attitudes toward language learning are closely linked to professional development and social status.

In addition, a sociolinguistic survey was conducted among 826 respondents residing in the Western region of Kazakhstan, including the Aktobe, West Kazakhstan, Atyrau, and Mangystau regions. The study aimed to identify the sociolinguistic characteristics of multilingualism in this part of the country. Various social spheres in which the sociolinguistic features of multilingualism are manifested were considered the primary objects of study. The obtained data confirmed that the majority of the region's residents possess varying levels of proficiency in Kazakh, Russian, and English, indicating the development of a balanced model of multilingualism.

In addition, the study's results were published in two research articles in the international Scopus database.

The first article, titled “*Sociolinguistic Aspects of Polylinguistic (Trilingualism) Education in the Western Region of Kazakhstan*”, was published in *X Linguae: European Scientific Language Journal* (highly ranked Q1 journal, Volume 16, Issue 2, April 2023, pp. 85-99). This work presents an analysis of the sociolinguistic aspects of multilingualism in the Western region of Kazakhstan, based on a sociolinguistic survey of the population.

The second article, “*Bilingualism and Multilingualism in Kazakhstan: Sociolinguistic and Educational Perspectives*”, was published in *Forum for Linguistic Studies* (a highly ranked Q2 journal, Volume 7, Issue 7, July 2025, pp. 785-795). It addresses the sociolinguistic and educational aspects of bilingualism and multilingualism in Kazakhstan. The research findings allowed for the identification of the roles of Kazakh, Russian, and English in society and within the

education system. It has been established that the Kazakh language plays a key role in preserving state and cultural identity; the Russian language continues to serve as an essential means of intercultural and professional communication; and the English language is viewed as a factor that expands international connections and professional opportunities in the context of globalization. Furthermore, it has been demonstrated that implementing multilingual education policies enhances young people's language competence and strengthens their competitiveness in the modern sociocultural and educational environment.

Publications and Approval of Research Results. Based on the key findings of the dissertation, nine scientific publications have been produced: two articles in Scopus-indexed journals, two articles in journals recommended by the Committee for Quality Assurance in Science and Higher Education of the Republic of Kazakhstan, three articles in international conference proceedings, and two articles in national conference proceedings.

Publications in journals indexed in the Scopus database:

1. Sociolinguistic Aspects of Polylinguistic (Trilingualism) Education in the Western Region of Kazakhstan. *X Linguae: European Scientific Language Journal*, Vol. 16, Issue 2, April 2023, pp. 85-99. ISSN 1337-8384, eISSN 2453-711X. DOI:10.18355/XL.2023.16.02.07.

https://www.xlinguae.eu/2023_16_2_7.html

2. Bilingualism and Multilingualism in Kazakhstan: Sociolinguistic and Educational Perspectives. *Forum for Linguistic Studies*, Vol. 7, Issue 7, 2025, pp.785-795. DOI: [10.30564/fls.v7i7.10172](https://doi.org/10.30564/fls.v7i7.10172)

<https://journals.bilpubgroup.com/index.php/fls/article/view/10172>

Articles published in publications recommended for publication based on the results of scientific activities by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan:

1. Sociolinguistic Issues of Trilingualism in the Field of Education // International Scientific Journal *Science and Life of Kazakhstan*, No. 7/2, 2019, pp. 311-315.

2. Implementation of CLIL Technology in Polylingual Education // *Bulletin of L.N. Gumilyov Eurasian National University*, Nur-Sultan, 2021, No. 1 (134), pp. 104-111. URL: <http://rep.enu.kz/handle/enu/3079>

Articles Published in Proceedings of International Conferences:

1. The Importance of Trilingualism in Society and Its Linguistic Issues // *Europejska Nauka XXI Wieku* – 2019, XV International Scientific and Practical Conference, Poland, May 15, 2019, pp. 70-75. E-mail: praha@rusnauka.com

2. Trilingualism as a Result of Language Communication // *Modern European Science* – 2019, Materials of the XV International Scientific and Practical Conference, Vol. 7, Sheffield, United Kingdom, June 30 – July 7, 2019, pp. 13-18.

3. Trilingualism – A Requirement of the Time // *Proceedings of the Republican Scientific and Practical Conference Kazakh Literary Studies: Traditions and Continuity*, Aktobe, 2018, pp. 335-338.

4. The Necessity of Trilingualism // Republican Scientific and Methodological Conference Updated Educational Program: Kazakh Language and Issues of Its Teaching, Aktobe, April 19, 2019, pp. 353-354.

5. Sociolinguistic Aspects of Bilingualism and Multilingualism in the Republic of Kazakhstan // Proceedings of the XX International Scientific Conference of Young Researchers, PhD Candidates, Master's Students, and Undergraduates Youth, Science, and Innovation, K. Zhubanov Aktobe Regional University, Aktobe, April 14, 2025, pp. 391-396.

Structure and Volume of the Dissertation. The dissertation consists of an introduction, three chapters, a conclusion for each chapter, a general conclusion, a list of references, and appendices. The research results are presented in 35 tables, 12 illustrations, and 4 appendices. The list of references includes 148 sources. The dissertation is 160 pages.

The dissertation research was carried out in accordance with the contemporary trends in the development of relevant fields of linguistics, such as sociolinguistics and psycholinguistics, as well as in line with the State Programs of the Republic of Kazakhstan:

- Constitution of the Republic of Kazakhstan: Adopted by the national referendum on August 30, 1995 (amended on January 1, 2023).

- Law of the Republic of Kazakhstan "On Languages in the Republic of Kazakhstan" dated July 11, 1997, No. 151 (amended on August 20, 2024).

- Law of the Republic of Kazakhstan "On Education" dated July 27, 2007, No. 319-III (amended on September 1, 2024).

- Concept for the Development of Language Policy in the Republic of Kazakhstan for 2023-2029, Government Resolution of the Republic of Kazakhstan dated October 16, 2023, No. 914.

- Government Resolution of the Republic of Kazakhstan "On the Approval of the Concept for the Development of Higher Education and Science in the Republic of Kazakhstan for 2023-2029" dated March 28, 2023, No. 248 (amended on June 14, 2024).

- Order of the Minister of Science and Higher Education of the Republic of Kazakhstan On the Approval of State Mandatory Standards for Higher and Postgraduate Education" dated July 20, 2022, No. 2. Registered with the Ministry of Justice of the Republic of Kazakhstan on July 27, 2022, No. 28916 (amended on February 20, 2023).

- "State Mandatory Education Standard of the Republic of Kazakhstan. Higher Education. Languages of the Trinity (Kazakh, Russian, and Foreign Languages)" (Kunanbayeva S.S.), SMES RK 6.08.085-2010, Almaty, 2010.

Doctoral Candidate's Contribution to the Preparation of Publications Based on the Research Results. The entire scope of the dissertation work – including the selection of research methods, the formulation and resolution of research objectives in accordance with the purpose of the study, as well as the preparation of publications based on its results – was carried out *independently by the author*. The formulation of specific research tasks and the discussion of the

obtained results were conducted *jointly with the academic supervisors within the framework of consultative and methodological support.*